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Translation, Validation, And Reliability of The Smartphone Addiction Instrument in The Indonesian Version for Early Childhood

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Abstract

The use of smartphones among young children is increasing rapidly with the advancement of technology. However, excessive use can lead to addiction and have negative impacts on children. This study aims to translate the Smartphone Addiction Instrument for early childhood into Indonesian and subsequently verify the validity and reliability of the instrument. This study is a cross-sectional observational survey involving the participation of 50 parents of children aged 4-5 years in data collection. There are three stages in this study: the translation process was developed through translation and back-translation; the validity involves three types of testing: content validity by consulting three experts: a psychologist, a psychiatrist, and an early childhood education lecturer; structural validity conducted through exploratory factor analysis and confirmatory factor analysis; and construct validity conducted using the Pearson test; and the reliability test was assessed using Cronbach's Alpha. The study results showed that the Content Validity Index (I-CVI) and the Scale Content Validity Index (S-CVI) of the instrument were both 1, indicating excellent content validity. The exploratory factor analysis revealed a three-factor structure, supported by eigenvalues, total explained variance, and the scree plot. Additionally, all recommended fit indices fell within acceptable ranges as determined by confirmatory factor analysis. The Cronbach's α value of 0.796 for the Indonesian version of the Smartphone Addiction Instrument indicates good reliability. Therefore, this instrument is both valid and reliable for use among early childhood populations and can be employed to collect actual data. The developed three-factor structure, comprising self-control failure, salience, and serious consequences, will help identify smartphone addiction in early childhood and can be used to plan educational interventions for parents, educators, and researchers in addressing smartphone addiction issues in early childhood.

Keywords: Reliability, Smartphone Addiction Instrument, Translation, Validation

INTRODUCTION

Smartphones have become an inseparable part of daily life, including for young children. The spread of digital technology among children is largely facilitated by parents who provide these devices at home. A study of parents with children aged 3-8 years in five Southeast Asian countries reported that 66% of children had used smartphones, while 14% of them owned their own smartphones [1].

Although the use of smartphones by children offers many benefits, such as access to education and entertainment [2], it also raises concerns about potential addiction. Smartphone addiction in young children can negatively impact their development. Not only does it cause physical problems such as vision impairment and pain in the fingers and neck [3], but smartphone addiction can also affect mental health, leading to depression, neuroticism, obsessive-compulsive behavior disorders [4], and even causing physical, communication, and cognitive impairments [5]. Recent data and studies on smartphone addiction trends in early childhood have been incorporated. For example, research by Fakhrul Muttaqin found that smartphone use among children aged 4–6 years at TPA Ceria Samarinda negatively impacted various aspects of their lives, including physical health, emotional well-being, social development, and academic performance [6]. Additionally, data from the Indonesian Central Bureau of Statistics (BPS) revealed that nearly half of early childhood children in Indonesia have used smartphones and accessed the internet, with prevalence increasing with age [7]. These findings underscore the relevance and urgency of addressing smartphone addiction in early childhood through focused research. Therefore, a measurement tool is needed to identify smartphone addiction in early childhood, as it allows for early detection of addiction signs, enabling interventions to be implemented before the impact worsens.

The commonly used instrument to measure smartphone addiction was first developed in 2013 by Kwon et al., called the Smartphone Addiction Scale (SAS) [4]. This instrument was developed to identify smartphone addiction in the adult population. In the same year, Kwon et al. also developed a short version of SAS for adolescents [8]. In 2018, the Smartphone Addiction Risk for Preschool Children was developed by the National Information Society Agency, which has been used by various researchers, such as Jeong Hye Park in her study on factors associated with smartphone addiction risk in preschool children [9]. However, this research instrument focused on children in Korea. Although the Korean version has been validated in its context, the cultural norms and technological environment in Indonesia may differ significantly, which could affect the relevance and accuracy of the tool in measuring smartphone addiction among Indonesian children. The research gap lies in the cultural and contextual differences between Korea and Indonesia, which make the existing Korean version of the scale insufficient for direct application. Cultural norms, parenting styles, and children's smartphone usage patterns differ significantly between the two countries, potentially leading to misinterpretation of items or inaccurate results. For instance, phrases or behaviors considered typical in Korea may not align with the lived experiences of Indonesian children and parents. Therefore, adaptation is essential to ensure the scale is culturally relevant, linguistically appropriate, and accurately reflects the context of smartphone addiction in Indonesia. Adjustments in terms, phrases, or even specific concepts are necessary so that the instruments can be well understood by Indonesian respondents. The validity and reliability of the instruments need to be rechecked after language and cultural adjustments to ensure that the instruments can still accurately and consistently measure what is intended in the new context. Therefore, this study aims to translate the smartphone addiction instrument for early childhood into Indonesian and validate its psychometric properties.

This research is important because it provides a measurement tool that can be used by researchers, educators, and health professionals to identify smartphone addiction problems in early childhood. With a valid and reliable measurement tool, appropriate interventions can be developed to help children manage their smartphone use in a healthier and more balanced manner. This study is expected to make a significant contribution to the field of technology addiction research in early childhood in Indonesia and pave the way for further efforts in preventing and addressing smartphone addiction in this vulnerable age group.

MATERIALS AND METHODS

This study is a cross-sectional design aimed at testing the reliability and validity of the Indonesian version of the Smartphone Addiction Instrument for children aged 4 to 5 years.

Participants

The research participants are parents of children aged 4 to 5 years who are attending Kindergarten in the city of Padang Panjang, Indonesia. The inclusion criteria for this cross-sectional survey are individuals who have children aged 4 to 5 years and are willing to participate, resulting in a total of 50 respondents for this study. The sample was selected randomly to ensure representativeness.

A sample size of 50 respondents was chosen based on practical constraints and accessibility to the target population. Although relatively small, this size meets the minimum criteria recommended in several guidelines for exploratory factor analysis (EFA), which suggest at least 5 respondents per item for initial analysis [10]. Research also supports that a minimum sample size of 50 is adequate for evaluating psychometric properties [11]. Additionally, studies such as those conducted by Ismail, which utilized 50 respondents for construct validation using two approaches exploratory factor analysis and the Rasch Modelhave demonstrated the feasibility of using this sample size [12]. While confirmatory factor analysis (CFA) typically requires larger samples for more robust model testing, this study serves as an initial exploration providing fundamental insights into the factor structure of smartphone addiction in early childhood. Further research with larger and more diverse samples is recommended to validate these findings and enhance their generalizability.

Study Design

The present study was a cross-sectional study that translated and validated the smartphone addiction instrument into Bahasa Indonesian [13]. The scale was adapted to the Indonesian cultural context following a systematic translation method.

Measures

The Smartphone Addiction instrument for Early Childhood was used as the main instrument to be translated into Bahasa Indonesia. The instrument assesses the risk of developing smartphone addiction in the past week. This consists of nine items using a four-point scale to assess each item (1 = never, 2 = Sometimes, 3 = Often, 4= Always). The total score is calculated by summing all scores obtained with a cutoff point of 24 out of 36, indicating individuals at risk of smartphone addiction. The higher the obtained score, the higher the risk of smartphone addiction. This scale is reported to have reliability with internal consistency of 0.80 for the Korean version [13].

Translation, Back-Translation, and Transcultural Adaptation of the SAS-EC

The double back-translation method by Cheung et al. [13] was adopted to translate the instrument of smartphone addiction for early childhood. Cultural adaptation in the translation process of research instruments aims to ensure that the translated tool is well understood and accepted by the target population, which may have a different cultural background. This process involves more than just translating words; it includes adjusting the context, expressions, and meanings to align with local cultural norms. First, two translators specializing in Korean language translated the instrument into Bahasa Indonesia. The first step is translating the instrument by a translator fluent in both languages, followed by a review by a panel of experts

with knowledge in culture, language, and the content of the instrument. Then, two teachers working in Korea performed the back translation. The draft version of The Smartphone addiction instrument in Indonesian version among early childhood was finally formed.

Several modifications were made to the items in the scale to fit the Indonesian cultural context, known as cultural adaptation. (1) Expert consultation: a psychiatrist, a psychologist, and a professor, all with research experience related to early childhood, all with bachelor's degrees and above. Experts were selected not only based on their academic qualifications but also their practical experience and familiarity with the research context. In addition to their qualifications, the selection criteria for these experts include a deep understanding of the local cultural context, experience working with early childhood populations, and expertise in child development as reflected in their research. Their ability to provide relevant insights and ensure the appropriateness of the scale's items for the target population is also crucial. Instrument validation was then conducted by these three experts. The final version was produced after adjusting and modifying each item in the initial draft of the Indonesian version to fit Indonesian cultural and linguistic norms. This expert will provide feedback on the appropriateness of the translation and suggestions for necessary cultural adjustments, such as replacing terms that may be confusing or irrelevant to the local cultural context. (2) Pilot testing: A convenient sampling method was used to select 10 parents for the initial survey, and each participant was invited to evaluate the layout design and understanding of each item. It is important to note that the researchers explained the purpose and significance of the study to the respondents before sending the scale and obtaining their consent. Respondents reported that the items on the scale were easy to understand, and the structure of the scale was clear. Finally, the smartphone addiction risk instrument in Indonesian version for early childhood was completed.

Statistical analysis

Statistical analysis was conducted using SPSS 25.0 and JASP 0.18. Frequency and composition ratios were used to describe the general demographic characteristics of parents with children aged 4 to 5 years. It evaluated the quality of items using content validity of the scale through expert consultation. The underlying factor structure of the translated scale was evaluated using Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), and construct validity was assessed using Pearson's correlation. Meanwhile, reliability analysis was conducted to determine the homogeneity and stability of the scale. The phases of the statistical analysis are depicted in Figure 1.

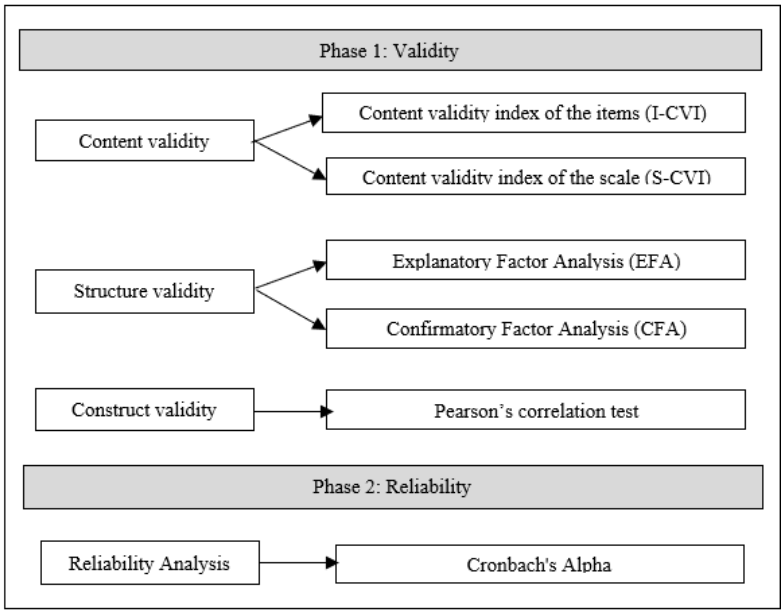

Figure 1. Phase of Statistical Analysis

Figure 1 illustrates two main phases in statistical analysis: validity and reliability. In the validity phase, three aspects were evaluated: content validity using the Content Validity Index (I-CVI for items and S-CVI for the scale), structural validity through Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA), and construct validity using Pearson's correlation test. The reliability phase involved reliability analysis using Cronbach's Alpha to assess the internal consistency of the instrument. This approach ensures that the instrument used is both valid and reliable in measuring the intended construct.

Validity analysis

The validity of The Smartphone addiction instrument in Indonesian version was evaluated based on content validity, structural validity, and construct validity. Three experts evaluated the instrument of the questionnaire for its content validity. The expert panel consisting of a psychiatrist, a psychologist, and a professor, a lecturer in Early Childhood Education program, assessed the content validity of the translated scale. These experts were selected based on: (i) extensive expertise in psychiatry, psychology, and Early Childhood Education; (ii) familiarity with the scale's manual steps and psychometric measurement; (iii) bachelor's degree or higher and at least 5 years of experience in the field; (iv) rigorous and pragmatic research approach; and (v) their willingness to participate in this study. Expert responses were collected using a four-point Likert scale (1 = not relevant, 2 = somewhat relevant, 3 = relevant, 4 = highly relevant). Not relevant and somewhat relevant were scored as 0, while relevant and highly relevant were scored as 1. The content validity index (I-CVI) of an item was determined by the percentage of experts who scored three or four out of the total number of participants. S-CVI is the content validity index of the scale, which is the average of the I-CVI of each item in the scale. Good content validity is indicated when I-CVI =1 and S-CVI =1, indicating that the overall content validity of the scale is good.[14], [15].

The underlying factor structure of the translated scale was evaluated using Explanatory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA). In EFA, the correlation values between the original variables and factors, called factor loadings, are required to determine the number of dimensions or factors in a research instrument. Factor loading values are considered high if they are above 0.4 [10]. A scree plot was also conducted to confirm the factor structure by examining eigenvalues. The number of eigenvalues

greater than 1 provides an interpretation of the number of factors or dimensions of a research instrument[16]. Meanwhile, the main purpose of CFA is to test the validity level of the construct variables from the proposed measurement model theory. Some measurements in this test are standardized loading factor (SLF), Construct reliability (CR), and average variance extracted (AVE). Good convergent validity is indicated by SLF≥0.5, CR≥0.7, and AVE≥0.5 [10].

The model fitting index for the translated scale was evaluated using JASP. The following metrics need to be good to confirm the replicability of the first-order three-factor structure of the Smartphone addiction scale: $p<0.1$, the goodness-of-fit index (GFI), the the Norm fit index (NFI), the incremental fit index (IFI), the Tucker Lewis index (TLI), and the comparative fit index (CFI). Typically, all other values should be >0.9, indicating a good fit of the model[17]. Additionally, the root mean square error of approximation (RMSEA) should be ≤0.08, indicating a good fit and a good model fit[18].

Additionally, tests of convergent and discriminant validity were conducted to determine the structural validity of the scale using construct validity assessed by the Pearson and Spearman test. This test was conducted using SPSS 25.0 with the criteria of sig value < 0.05, then it is declared valid. The validity of the test is moderate when $0.4<r<0.7$. When $r<0.4$, the validity of the test is low [19].

Reliability analysis

The reliability test analysis was conducted on the translated instrument among early childhood. For internal consistency analysis, Cronbach's alpha coefficient was computed for the translated scale and measured to evaluate item homogeneity. The reliability test analysis was conducted on the translated Indonesian version of smartphone addiction instrument. For internal consistency analysis, Cronbach's coefficient was computed for the translated scale and measured to evaluate item homogeneity. It would be reliable if Cronbach's alpha were to be higher than 0.70 [20].

RESULTS AND DISCUSSION

The Smartphone Addiction Scale for early childhood was cross-culturally adapted to identify and measure the level of smartphone addiction among children. In this study, the validity and reliability were tested on 50 children aged 4 to 5 years old. The Smartphone Addiction Scale has been applied to the Korean population and has good construct validity and reliability. It can be used to predict whether children have experienced smartphone addiction, aiming to avoid the negative impacts of smartphone addiction on early childhood such as mental, physical, communication, and even cognitive impairments [5]. It can also facilitate the development of educational interventions by educators, which is essential to reduce smartphone addiction among children.

The Smartphone Addiction instrument in this study was translated into Korean and cross-culturally adapted according to the Brislin translation principle [13]. Three experts adjusted the initial translation based on their professional knowledge, clinical experience, and language expression habits, and eventually, The Smartphone addiction instrument in Indonesian version for early childhood was developed. An extensive review of the content validity of the items was conducted by three experts, and the experts agreed that the scale, in its original configuration, showed good content validity, with all experts agreeing on the scale items.

The sociodemographic characteristics

This study involved 50 parents of children aged 4 years (34%) to 5 years (66%). The participants had an

average age of 35 years. Half of the participants have a lower than bachelor's degree, with the marital status mostly being married (98%). Meanwhile, the characteristics of the 50 children are that 66% are female, and most of them prefer to use smartphones to watch TV/videos/YouTube. The following Table 1 provides information about the sociodemographic characteristics of their children.

Table 1 Frequency distribution of sociodemographic characteristics for 50 Children.

Factors	Group		Quantity	%
Age	4		17	34
	5		33	66
Gender	Male		17	34
	Female		33	66
Frequency of smartphone usage	week (numbers per day)	1	32	64
		≥ 2	18	36
	weekend numbers per day)	< 3	41	82
		≥ 3	9	18
Duration of smartphone usage	weekday (minutes per day)	< 30	35	70
		30 – 120	14	28
		>120	1	2
	weekend (hours per day)	< 1	35	70
		1 – 3	12	24
		> 3	3	6
Content most frequently viewed when using smartphones	View digital comics/cartoon images		3	6
	Watch TV/videos/YouTube		40	80
	Play games		7	14
	Surf websites		0	0

Table 1 shows that the majority of children are 5 years old (66%) and female (66%). Most of them use smartphones less than twice per day on weekdays (64%) and less than three times per day on weekends (82%), with a duration of less than 30 minutes per day on weekdays (70%). The most frequently accessed content is watching TV, videos, or YouTube (80%). This indicates that the primary purpose of smartphone use among children is entertainment involving visual and audio elements.

Translation and modification of the Smartphone Addiction Instrument for Early Childhood

The original smartphone addiction instrument in Indonesian version for early childhood was developed through translation, and back translation. Three experts were invited to conduct an expert consultation on the draft Indonesian version of this scale. It included three factors: self-control failure, salience, and serious consequences and nine items. The items were developed as a pretest version of the smartphone addiction instrument for early childhood.

The three identified factors, namely self-control failure, salience, and serious consequences, have important implications for understanding smartphone addiction. Self-control failure reflects the inability to regulate smartphone use, salience indicates the dominance of smartphones in an individual's life, and serious consequences highlight its negative impacts. These three factors align with the theoretical framework of addiction, emphasizing the behavioral, cognitive, and emotional dimensions of addictive behavior, consistent with similar research findings [4]. Three factors of smartphone addiction are also supported by studies on the role of self-control and parental mediation in managing excessive Internet use, which underscore the importance of self-regulation in addressing digital addiction [21]. Additionally, research on online game

addiction explores the multifaceted impacts of excessive digital use, further aligning with the identified factors [22]. These findings provide a robust foundation for comprehensively understanding and identifying children addicted to smartphones and serve as a valuable reference for designing effective interventions to mitigate smartphone addiction in early childhood.

Validity

Instrument validity ensures that the measurement tools used in research truly measure what they are intended to measure. This includes content validity, structural validity, and construct validity.

Content Validity

To assess the content validity using I-CVI and S-CVI, three qualified experts were invited: a psychologist, a psychiatrist, and a lecturer who researches on early childhood. Good content validity is indicated when I-CVI =1 and S-CVI =1, indicating that the overall content validity of the scale is good.[14], [15]**.** The results showed a score of 1 for both I-CVI and S-CVI. These results indicate that all experts involved in the assessment agree that each item on the instrument meets the criteria of content validity, thus achieving full consensus among the experts regarding the content validity of the instrument. In other words, each item is considered relevant and adequately covers the construct or concept intended to be measured by the instrument. Thus, the Indonesian version of the Smartphone Addiction Instrument was developed, divided into three dimensions: self-control failure, salience, and serious consequences, consisting of 9 items. These items are rated on a four-point scale (1 = strongly disagree, 4 = strongly agree).

Based on the content validation results of the Smartphone Addiction instrument in the Indonesian version for Early Childhood instrument, three experts agreed that three factors, namely self-control failure, salience, and serious consequences, can identify whether young children are addicted to smartphone. Additionally, there were several suggestions from the experts regarding the 9 items of the instrument, such as on the self-control failure factor, which indicates a decrease in self-control over smartphone use. An example item, "My child exceeds the smartphone usage time limit," was changed to "My child uses the smartphone for more than one hour per day." This change was made because the sample in this study was aged 4 to 5 years, and according to WHO recommendations, the healthy smartphone usage time limit for that age group is 1 hour per day.

Meanwhile, the salience factor, which refers to smartphone use becoming more important than other activities, did not undergo changes from the original item as it was considered clear and supportive of the salience factor. An example item from this factor is "My child wants to play with the smartphone all the time."

Furthermore, the adaptation process and validity outcomes of this study were influenced by cultural factors specific to the target population. The phrasing and context of the items were adjusted to align with local norms and values, ensuring relevance and comprehensibility. For example, there was a slight modification to the Serious Consequences factor, which refers to continuous smartphone use despite causing physical, psychological, and social harm to the child. One example item, "I argue with my child because of smartphone use," was changed to "When I try to take the smartphone, my child throws a tantrum like getting angry, crying, or screaming." This change reflects cultural nuances more accurately in capturing the dynamics of children's behavior and parent-child interactions. In conclusion, this adaptation ensures the instrument's relevance within the local cultural context while highlighting the importance of considering cultural influences in instrument validation for broader applications.

Structure validity

In Explanatory Factor Analysis (EFA), the Kaiser Meyer Olkin Measure of Sampling Adequacy (KMO MSA) is 0.726, and the Bartlett sphericity test is significant. The number of eigenvalues greater than 1 provides an interpretation of the number of factors or dimensions of a research instrument [16], **b**ased on the results obtained using SPSS, it is shown that there are three factors formed from 9 items with eigenvalues greater than 1. These three factors can explain 72.685% of the variance. Additionally, the varimax rotation results indicate that the three factors respectively explain 26.630%, 23.402%, and 22.652% of the variance. Furthermore, the factor loadings of these three factors can be seen in Table 2.

Table 2 Factor loading of EFA

Item	Factor 1	Factor 2	Factor 3	Communalities score
1	0.084	-0.072	**0.840**	0.717
2	0.062	0.039	**0.817**	0.673
3	0.354	0.132	**0.745**	0.698
4	**0.792**	0.151	0.156	0.674
5	**0.871**	-0.023	0.104	0.770
6	**0.747**	0.283	0.232	0.692
7	0.516	**0.698**	-0.034	0.755
8	0.215	**0.830**	0.136	0.754
9	-0.059	**0.895**	-0.044	0.807
Eigenvalues	3.454	1.868	1.235	

Table 2 shows the results of the EFA with three main factors. Factor 1, labeled as "Salience," is dominant for items 4, 5, and 6; Factor 2, labeled as "Serious Consequences," is dominant for items 7, 8, and 9; and Factor 3, labeled as "Self-Control Failure," is dominant for items 1, 2, and 3. Factor 1 contributes the most with an eigenvalue of 3.454. Communalities scores, ranging from 0.673 to 0.807, indicate that the variance of each item is well explained. These three factors collectively account for 65.78% of the total variance, which is considered sufficient for a social research model. This table demonstrates that the model effectively groups items into three relevant main factors.

A scree plot was also conducted to confirm the three-factor structure within the original scale, revealing a decreasing tendency after the third point, as shown in Figure 2.

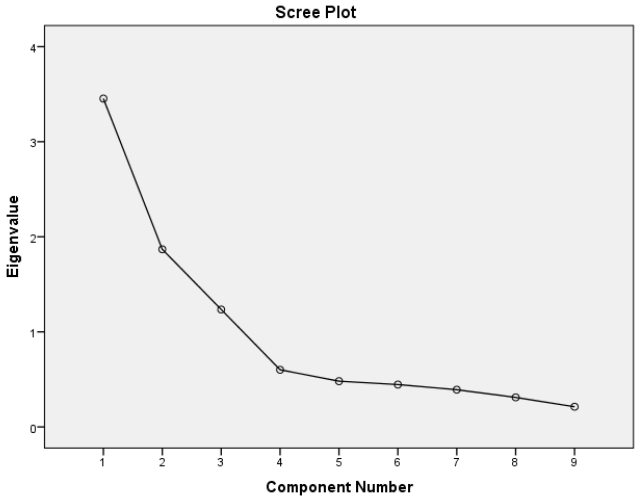

Figure 2. Scree Plot of EFA

The scree plot in Figure 2 shows the eigenvalues of the components, with the y-axis representing the

magnitude of the eigenvalues and the x-axis representing the component number. The plot shows a sharp decline in eigenvalues after the first component, with the first component explaining most of the variance. The eigenvalues drop significantly after the first few components, indicating that only three components contribute significantly, while the subsequent components make a small contribution in explaining the variance of the data.

Based on the confirmatory factor analysis (CFA), The three-factor model was fitted using the maximum likelihood SEM, as depicted in Figure 3. The CFA results showed p = 0.110, CFI=0.940, TLI=0.911, NFI=0.911, IFI=0.945, RMSA=0.08, GFI=0.975, and MFI=0.916. This indicates that the existing model fits well based on the selected fit indices.

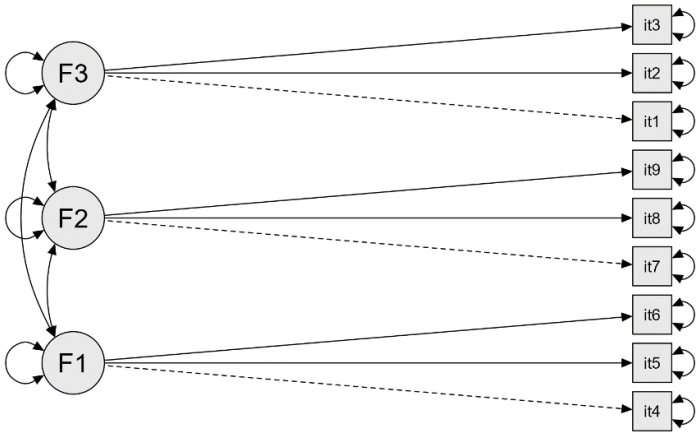

Figure 3. Model of The Smartphone Addiction Instrument in Indonesia Version

Figure 3 illustrates the model of the Indonesian version of the smartphone addiction instrument, featuring three latent factors (F1, F2, F3) connected to several indicators (it1 to it9). The curved lines between the factors indicate correlations among them. This model demonstrates how each factor contributes to the associated indicators in measuring smartphone addiction.

A p-value greater than 0.05 indicates that the model does not differ significantly from the observed data, meaning that the model is a good fit. The CFI, TLI, NFI, IFI, GFI, and MFI values, all greater than 0.90, demonstrate that the model has an excellent fit with the data. Meanwhile, the RMSA value of 0.08 is within the acceptable threshold to indicate an adequate model fit. Overall, these results show that the three-factor model used has a good fit with the existing data.

Convergent validity analysis shows that the AVE values range from 0.507 to 0.563, and the CR values range from 0.751 to 0.794. For further details, please refer to Table 3.

Table 3 Construct Reliabilty and Average Variance Extracted

Item	SLF	Error	Total SLF	Total Error	AVE	CR
Item1	0,653	0,573				
Item2	0,619	0,617	2,115	1,48	0,507	0,751
Item3	0,843	0,29				
Item4	0,71	0,496				
Item5	0,711	0,494	2,246	1,31	0,563	0,794
Item6	0,825	0,32				
item7	0,845	0,286	2,229	1,32	0,560	0,790

Item8	0,76	0,423
Item9	0,624	0,611

Based on Table 3, the results of the convergent validity analysis show that AVE values range from 0.507 to 0.563, and CR values range from 0.751 to 0.794. AVE values above 0.50 indicate that more than 50% of the variance of the indicators can be explained by the construct, demonstrating adequate convergent validity. Meanwhile, CR values above 0.70 indicate that the construct has good internal reliability and consistency. Overall, these results show that the measured construct has adequate validity.

Construct validity

Construct validity is assessed using Pearson correlation analysis. This test was conducted using SPSS 25.0 with the sig value < 0.05. The results of the analysis indicate that the correlation between each item and the total score is significant. The correlation values range from 0.419 to 0.786, as shown in Table 4. In other words, the nine statement items on The Smartphone addiction instrument in Indonesian version questionnaire exhibit factor loading values exceeding 0.4, indicating their validity [19].

Table 4 Pearson's Correlation

	Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item total
Pearson Correlation Total	0.419	0.458	0.656	0.692	0.641	0.786	0.711	0.670	0.446	1
Sig. (2-tailed)	0.002	0.001	0.000	0.000	0.000	0.000	0.000	0.000	0.001	

Table 4 shows that each item has a significant relationship with the total score. Furthermore, it confirms that all items in the questionnaire consistently contribute to measuring smartphone addiction. The varying correlation values reflect different strengths of the relationship between the items and the total score, with higher values indicating stronger and more consistent relationships. Overall, these results demonstrate that each item is relevant and significantly contributes to the measurement of smartphone addiction.

Reliability

The reliability test results of the Indonesian version of the Smartphone Addiction Instrument questionnaire, at a significance level of 5%, yield a Cronbach's Alpha reliability statistic value of 0.796. This value indicates that the instrument has good internal consistency and is reliable for measuring smartphone addiction in early childhood. A Cronbach's Alpha value close to or exceeding 0.70 is generally considered an indication of adequate reliability, so the value of 0.796 shows that the items in the instrument consistently measure the same construct [23]. This supports the use of the questionnaire in research or practice to provide consistent and reliable information about smartphone addiction in respondents.

CONCLUSION

After undergoing the process of translation, the Smartphone Addiction instrument among early childhood has been successfully integrated into Indonesian, and its psychometric validity has been confirmed. In response to the issue of smartphone addiction among early childhood, the developed questionnaire can serve as a reference for parents and teachers to identify children at high risk of smartphone addiction and can serve as a basis for research related to smartphone addiction among early childhood. In addition, for

healthcare providers, this instrument can be used to more effectively detect symptoms of smartphone addiction in children. Healthcare providers can use the results from this questionnaire to provide an initial evaluation of children's smartphone usage behavior and offer appropriate early interventions, such as educating parents about the negative effects of excessive smartphone use. They can also recommend therapy-based approaches for children who have been identified as having an addiction, as well as provide guidance to parents on how to limit the duration and content of smartphone use, in order to support healthy and balanced development in early childhood.

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